

REMARKS

Claims 1-9 were pending in this application. Claims 1-9 have been amended to address the claim objection, §101, and §103 rejections, as discussed below. Claim 4 has been amended to depend from claim 1. Claim 5 has been cancelled. No new subject matter is believed to have been added by these amendments. Therefore, claims 1-4 and 6-9 remain in this application.

Specification Objections

The Examiner objects to the title as being non-descriptive. Applicant has now amended the title in accordance with the Examiner's suggestion.

Claim Objections

Claims 1-9 stand objected to for informalities.

The Examiner indicates that the preamble of the claims relates to "diagnosing" and that no step of drawing a conclusion of making a diagnosis appears in the claims. Applicant has amended the preamble of independent claim 1 in the context of an evaluation and has added a corresponding evaluation step at the end of the claim. Support for these added limitations is found in paragraphs [0011] – [0015] of the corresponding published application, namely, U.S. Pat. App. Pub. No. 2008/0249744. The preamble of independent claims 7 and 8, although having the "diagnosing" language has now been amended to clarify the intended use of the claimed system (which therefore forms no part of the claimed system).

The Examiner suggests that Applicant should use just the equations and define the variables within the claims. However, Applicant respectfully submits that this is already how the claims are structured. Applicant however does agree with the Examiner that redundant equations can be removed after they have been initially introduced. Accordingly, the claims have been amended as such.

The Examiner also questions the use of the word "or" on line 6 of claim 1 because he feels that this would result in no calculation to be performed for what is determined after the "or". Applicant would like to respectfully point out that the "or" is correct because in the third section of the claim where it stated "based on said determined total amounts of steam loss," the "amount" can be either the "total receiving steam amount" or the "total steam loss amount" determined by the language after the "or".

Applicant believes that the above amendments to claims 1-9 and explanation with respect to the claim 1 informalities addresses the Examiner's objections. Reconsideration of these objections is respectfully requested.

35 U.S.C. §101 Rejections

Claims 1-6 (which encompass the method claims) stand rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. Specifically, the Examiner asserts that although the collection of steam data may be obtained via machines, the calculations resulting from the data is simply a mental process that is not specifically tied to a machine.

Applicant hereby addresses this rejection by setting forth independent claim 1 the steps of evaluating via a system the effectiveness of the predetermined system improvement on the steam loss reduction on the basis of one of: (a) the improvable unknown steam ratio (Kts) indicating the ratio of reduction in the total unknown steam amount (Qx) realized by the predetermined system improvement; (b) the combination of the unknown steam ratio (Kx) and the improved unknown steam ratio (Kxx) indicating the ratio of reduction in the total unknown steam amount (Qx) realized by the predetermined system improvement; and (c) the combination of the unknown steam ratio (Kx) and the apparent improved unknown steam ratio (Kxx') indicating the ratio of reduction in the total unknown steam amount (Qx) realized by the predetermined system improvement; and then applying the predetermined system improvement to components of the steam piping system.

Applicant respectfully request reconsideration of the §101 rejection of claims 1-6.

35 U.S.C. §103 Rejections

Claims 1-9 stand rejected under 35 U.S.C. §103(a) for obviousness based on U.S. Pat. App. Pub. No. 2002/0052716 to Fujiwara ("Fujiwara").

- A. The Examiner asserts that the concept of steam loss is disclosed in the Fujiwara publication.

As discussed in paragraphs [0002] – [0003] of the corresponding publication of the instant application, with respect to the steam loss existing in the steam piping to the steam-using device during the steam supply process, it may be possible in the prior art (e.g., the Fujiwara publication) to determine the "amount of reduction" in the steam loss (i.e.,

decrease in the steam loss amount) realized by the predetermined system improvement, but it is impossible in the prior art Fujiwara system to determine the “ratio of reduction” in the steam loss (i.e., decrease in the steam loss ratio) realized by the predetermined system improvement. Thus, before the present invention, it has been difficult to appropriately evaluate the effectiveness of the trap replacement for the steam loss reduction.

Furthermore, from among various types of the steam loss existing due to various causes in the steam piping, it is possible in Fujiwara to determine the steam loss amount solely for “the steam loss which is improved by the predetermined system Improvement”, yet it is impossible in the Fujiwara system to grasp the steam loss amount regarding all types of the steam loss existing due to various causes in the steam piping.

Additionally, the Fujiwara system does not pay attention to the “amount of steam supplied to the upstream end of the steam piping” and the “amount of steam required by the steam-using device.” Therefore, for example, in the case where a predetermined system improvement is planned, even when the system improvement is too expensive, but the “ratio of reduction” in all types of the steam loss existing due to various causes is very small, the Fujiwara system provide for an appropriate evaluation concerning the effectiveness of the system improvement being low. In contrast, the claimed invention can appropriately and quantitatively evaluate the effectiveness of the system improvement as being low.

- B. The Examiner dismisses the claimed calculations by asserting that the resultant ratios are simply “mathematical manipulations” that would have been obvious to one having ordinary skill in the art, especially in light of the Fujiwara publication disclosing fractional relationships.

Although each of the various “amount” and “ratio” limitations used in the claims can be represented by a simple equation, the feature of the claims of the present invention does not lie in the equation itself. Instead, the novelty and non-obviousness of the present invention lies in each of the claimed “ratios” (K_t s, K_x & K_{xx} , K_x , and K_{xx}) that show a “ratio of reduction” in all of the steam loss existing due to various causes in the steam piping and enable the appropriate and quantitative effectiveness evaluation of the system improvement, and in the claimed aspect of how to obtain those ratios.

The Fujiwara publication fails to suggest not only the “ratio,” but also the steam loss amount (Q_x) relating to all of the steam loss existing due to various causes in the

steam piping, the steam amount (Q_i) supplied to the upstream end of the steam piping, and the steam amount (Q_o) required by the steam-using device, as discussed above.

Applicant respectfully submits that the Examiner incorrectly concludes that “the loss discussed by Fujiwara would be understood by those of ordinary skilled in the art to be, inherently, the difference between the steam sent to the trap and the steam that actually reaches the trap.” Specifically, each of the traps provided at various portions in the steam piping is configured to separate steam condensate generated in the steam piping from the steam and discharge the steam condensate. At the trap, some steam in the steam piping may leak with the steam condensate depending on a defect present in the trap or a type of the trap, and it is this leak amount in the trap that corresponds to the steam loss in the Fujiwara system. Therefore, the steam loss described in the Fujiwara publication is not equivalent to what the Examiner describes (i.e., “the difference between the steam sent to the trap and the steam that actually reaches the trap”). Applicant also respectfully submits that contrary to the Examiner’s assertion on the bottom of page 4 of the Office Action, the amount of steam intended for or sent to the trap (the ‘necessary’ amount)” would not be understood by one skilled in the art.

The Examiner asserts on page 5 of the Office Action that “Fujiwara discloses a current leak amount and a leak amount which will exist once repairs/replacements are done.” However, as discussed above, the leak amount described in the Fujiwara publication exclusively refers to the steam leak amount from the trap -- no other steam loss is described in Fujiwara.

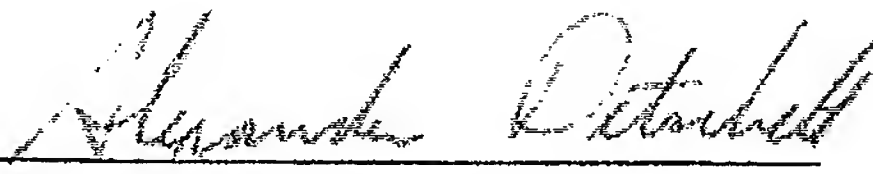
The Fujiwara publication fails to disclose, teach, or suggest considering the steam loss amount as a whole regarding all of the steam loss existing due to various causes in the steam piping (including the steam loss other than the steam leak amount from the trap). Therefore, the Fujiwara publication fails to disclose, teach, or suggest the claimed aspect of obtaining what percentage of the steam loss amount (Q_x) regarding all of the steam loss existing due to various causes in the steam piping is reduced by the predetermined system improvement (i.e., obtaining the “ratio of reduction”). Accordingly, Applicant respectfully submits that pending claims 1-4 and 6-9 are novel and non-obvious in view of the cited prior art.

CONCLUSION

Based on the foregoing amendments and remarks, reconsideration of the rejections and allowance of pending claims 1-4 and 6-9 are respectfully requested.

Respectfully submitted,

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